

CLAIMS

1. A system management method for associating at least a process object and at least a process that should be executed for each process object with each node in a tree structure, and operating each node based on the tree structure so as to manage the process object and the process, comprising:
  - a user registration step of performing a process for registering a user ID to be uniquely assigned to each registered user that performs operations for a general node corresponding to the process object or for a function node corresponding to the process, and storing the user ID in a storing means;
  - a node number assigning step of uniquely assigning a node number to each of the general node and the function node, and storing the node number in the storing means by associating the node number with the general node or the function node;
  - a node setting step of setting the function node as a child node of the general node corresponding to the process object for which the process corresponding to the function node should be performed, and setting the general node as a parent node of the function node, and storing information of the set child node into the storing means by associating the information with the general node that is the parent node;
  - an authority setting step of setting registered user operation authority for each registered user for each of the general nodes, and storing the registered user operation authority into the storing means by associating the registered user operation authority with the general node; and
  - a process execution step of, when

execution of the process corresponding to the function node is requested by the registered user, causing the function node to execute the process only when the process is permitted by the registered user operation authority, of the registered user requesting the process, set in the general node that is a parent node of the function node.

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2. The system management method as claimed in claim 1, comprising:

15 in the authority setting step, setting, for each of the general node, non-registered user operation authority that is operation authority of a non-registered user that is not registered by the user registration step, and storing the non-registered user operation authority in the storing means by associating the non-registered user operation authority with the general node; and

20 in the process execution step, when execution of the process corresponding to the function node is requested by the non-registered user, causing the function node to execute the process only when the process is permitted by the non-registered user operation authority set for the general node that is the parent node of the function node.

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3. The system management method as claimed in claim 1 or 2, comprising:

35 in the authority setting step, further setting, for each of the general nodes, function

node operation authority for each function node, and storing the function node operation authority in the storing means by associating the function node operation authority with the general node; and

5                   in the process execution step, when execution of the process corresponding to the function node is requested by any of function nodes, causing the function node to execute the process only when the process is permitted by the function  
10 node operation authority, of the function node that requests the process, set for the general node that is the parent node of the function node.

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4. The system management method as claimed in any one of claims 1-3, comprising:

                  in a message sending step of sending a  
20 message in which at least any one of the function node or the user is a sending origination and at least any one of function nodes is a destination, detecting presence or absence of execution of a predetermined event process at the sending  
25 origination, and sending the message received from the sending origination according to the detection result; and

                  in a receiving step of receiving the message to the destination, when receiving the  
30 message, sending a message having the destination as a sending origination to the destination or causing the destination to execute a predetermined event process according to a condition that is set beforehand.

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5. The system management method as claimed in claim 4, comprising:

in the message sending step and the  
5 message receiving step, sending and receiving an asynchronous message using a queue that temporarily stores the message.

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6. The system management method as claimed in claim 5, comprising:

in the message sending step and the  
15 message receiving step, sending or receiving the asynchronous message according to a priority set for each message when sending or receiving the asynchronous message.

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7. The system management method as claimed in any one of claims 4-6, comprising:

25 in the message receiving step, when receiving the message, determining whether the message is a recursive message from the own node based on sending origination information of the message, and recursively performing message sending  
30 or the event process based on the sending origination information of the message when the message is the recursive message from the own node.

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8. The system management method as claimed

in any one of claims 4-7, comprising:

in the message receiving step, receiving only a message sent from a sending origination set in a predetermined access list.

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9. A system management apparatus for  
10 associating at least a process object and at least a  
process that should be executed for each process  
object with each node in a tree structure, and  
operating each node based on the tree structure so  
as to manage the process object and the process,  
15 comprising:

storing means for storing each piece of  
information of a general node corresponding to the  
process object, a function node corresponding to the  
process, and a registered user for operating the  
20 general node or the function node;

user registration means for performing a  
process for registering a user ID to be uniquely  
assigned to each registered user and storing the  
user ID in the storing means;

25 node number assigning means for uniquely  
assigning a node number to each of the general node  
and the function node, and storing the node number  
in the storing means by associating the node number  
with the general node or the function node;

30 node setting means for setting the  
function node as a child node of the general node  
corresponding to the process object for which the  
process corresponding to the function node should be  
performed, and setting the general node as a parent  
35 node of the function node, and storing information  
of the set child node into the storing means by  
associating the information with the general node

that is the parent node;

authority setting means for setting  
registered user operation authority for each  
registered user for each of the general nodes, and  
5 storing the registered user operation authority into  
the storing means by associating the registered user  
operation authority with the general node; and

process execution means for, when  
execution of the process corresponding to the  
10 function node is requested by the registered user,  
causing the function node to execute the process  
only when the process is permitted by the registered  
user operation authority, of the registered user  
requesting the process, set in the general node that  
15 is a parent node of the function node.

20 10. The system management apparatus as  
claimed in claim 9, wherein:

the authority setting means includes means  
for setting, for each of the general node, non-  
registered user operation authority that is  
25 operation authority of a non-registered user that is  
not registered by the user registration means, and  
storing the non-registered user operation authority  
in the storing means by associating the non-  
registered user operation authority with the general  
30 node; and

the process execution means includes means  
for, when execution of the process corresponding to  
the function node is requested by the non-registered  
user, causing the function node to execute the  
35 process only when the process is permitted by the  
non-registered user operation authority set for the  
general node that is the parent node of the function

node.

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11. The system management apparatus as claimed in claim 9 or 10, wherein:

the authority setting means includes means for further setting, for each of the general nodes, function node operation authority for each function node, and storing the function node operation authority in the storing means by associating the function node operation authority with the general node; and

15 the process execution means includes means for, when execution of the process corresponding to the function node is requested by any of function nodes, causing the function node to execute the process only when the process is permitted by the function node operation authority, of the function node that requests the process, set for the general node that is the parent node of the function node.

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12. The system management apparatus as claimed in any one of claims 9-11, comprising:

message sending means for sending a message in which at least any one of the function node or the user is a sending origination and at least any one of function nodes is a destination; and

receiving means for receiving the message to the destination,

the message sending means including means

for detecting presence or absence of execution of a predetermined event process at the sending origination, and sending the message received from the sending origination according to the detection  
5 result, and

the receiving means including means for, when receiving the message, sending a message having the destination as a sending origination to the destination or causing the destination to execute a  
10 predetermined event process according to a condition that is set beforehand.

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13. The system management apparatus as claimed in claim 12, wherein:

each of the message sending means and the message receiving means includes means for sending  
20 and receiving an asynchronous message using a queue that temporarily stores the message.

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14. The system management apparatus as claimed in claim 13, wherein:

each of the message sending means and the message receiving means includes means for sending  
30 or receiving the message according to a priority set for each message when sending or receiving the asynchronous message.

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15. The system management apparatus as



claimed in any one of claims 12-14, wherein the message receiving means includes:

means for, when receiving the message, determining whether the message is a recursive  
5 message from the own node based on sending origination information of the message; and

means for recursively performing message sending or the event process based on the sending origination information of the message when the  
10 message is the recursive message from the own node.

15 16. The system management apparatus as claimed in any one of claims 12-15, wherein the message receiving means includes means for receiving only a message sent from a sending origination set in a predetermined access list.

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17. A program for causing a computer to  
25 perform a system management process for associating at least a process object and at least a process that should be executed for each process object with each node in a tree structure, and operating each node based on the tree structure so as to manage the process object and the process, the program causing  
30 the computer to perform:

a user registration step of performing a process for registering a user ID to be uniquely assigned to each registered user that performs  
35 operations for a general node corresponding to the process object or for a function node corresponding to the process, and storing the user ID in a storing

means;

5 a node number assigning step of uniquely  
assigning a node number to each of the general node  
and the function node, and storing the node number  
in the storing means by associating the node number  
with the general node or the function node;

10 a node setting step of setting the  
function node as a child node of the general node  
corresponding to the process object for which the  
process corresponding to the function node should be  
performed, and setting the general node as a parent  
node of the function node, and storing information  
of the set child node into the storing means by  
associating the information with the general node  
15 that is the parent node;

an authority setting step of setting  
registered user operation authority for each  
registered user for each of the general nodes, and  
storing the registered user operation authority into  
20 the storing means by associating the registered user  
operation authority with the general node; and

a process execution step of, when  
execution of the process corresponding to the  
function node is requested by the registered user,  
25 causing the function node to execute the process  
only when the process is permitted by the registered  
user operation authority, of the registered user  
requesting the process, set in the general node that  
is a parent node of the function node.

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18. A computer readable recording medium  
35 storing a program as claimed in claim 17.